AMENDMENT TO THE CLAIMS

1. (Currently Amended) A method comprising:

monitoring consumption of a sputter target to determine a deposition rate of a metal layer during metal deposition processing using the sputter target;

modeling a dependence of the deposition rate on at least one of deposition plasma power and deposition time, modeling said dependence of the deposition rate being based upon a target life of the sputter target, modeling said dependence of the deposition rate comprising using [[deposition rate]] sensor data <u>relating to deposition rate</u> for performing said modeling; and

applying the deposition rate model to modify the metal deposition processing to form the metal layer to approach a desired thickness.

2. (Canceled)

3. (Original) The method of claim 1, wherein modeling the dependence of the deposition rate on the at least one of the deposition plasma power and the deposition time comprises modeling the dependence of the deposition rate on both the deposition plasma power and the deposition time.

4. (Original) The method of claim 2, wherein modeling the dependence of the deposition rate on the at least one of the deposition plasma power and the deposition time comprises modeling the dependence of the deposition rate on both the deposition plasma power and the deposition time.

5. (Original) The method of claim 1, wherein applying the deposition rate model to modify the metal deposition processing comprises inverting the deposition rate model to determine the at least one of the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

6. (Original) The method of claim 2, wherein applying the deposition rate model to modify the metal deposition processing comprises inverting the deposition rate model to determine the at least one of the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

7. (Original) The method of claim 3, wherein applying the deposition rate model to modify the metal deposition processing comprises inverting the deposition rate model to determine the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

8. (Original) The method of claim 4, wherein applying the deposition rate model to modify the metal deposition processing comprises inverting the deposition rate model to determine the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

9. (Original) The method of claim 1, wherein modeling the dependence of the deposition rate on the at least one of the deposition plasma power and the deposition time

comprises fitting previously collected metal deposition processing data using at least one of polynomial curve fitting, least squares fitting, polynomial least squares fitting, non polynomial least squares fitting, weighted least squares fitting, weighted polynomial least squares fitting, and weighted non polynomial least squares fitting.

10. (Original) The method of claim 2, wherein modeling the dependence of the deposition rate on the target life of the sputter target comprises fitting previously collected metal deposition processing data using at least one of polynomial curve fitting, least squares fitting, polynomial least squares fitting, non polynomial least squares fitting, weighted least squares fitting, weighted polynomial least squares fitting, and weighted non polynomial least squares fitting.

11. (Currently Amended) A computer readable, program storage device, encoded with instructions that, when executed by a computer, perform a method comprising:

monitoring consumption of a sputter target to determine a deposition rate of a metal layer during metal deposition processing using the sputter target;

modeling a dependence of the deposition rate on at least one of deposition plasma power and deposition time, modeling said dependence of the deposition rate being based upon a target life of the sputter target, modeling said dependence of the deposition rate comprising using [[deposition rate]] sensor data <u>relating to deposition rate</u> for performing said modeling; and

applying the deposition rate model to modify the metal deposition processing to form the metal layer to have a desired thickness.

12. (Canceled)

13. (Original) The device of claim 11, wherein modeling the dependence of the deposition rate on the at least one of the deposition plasma power and the deposition time comprises modeling the dependence of the deposition rate on both the deposition plasma power and the deposition time.

14. (Original) The device of claim 12, wherein modeling the dependence of the deposition rate on the at least one of the deposition plasma power and the deposition time comprises modeling the dependence of the deposition rate on both the deposition plasma power and the deposition time.

15. (Original) The device of claim 11, wherein applying the deposition rate model to modify the metal deposition processing comprises inverting the deposition rate model to determine the at least one of the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

16. (Original) The device of claim 12, wherein applying the deposition rate model to modify the metal deposition processing comprises inverting the deposition rate model to determine the at least one of the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

17. (Original) The device of claim 13, wherein applying the deposition rate model to modify the metal deposition processing comprises inverting the deposition rate model to determine the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

18. (Original) The device of claim 14, wherein applying the deposition rate model to modify the metal deposition processing comprises inverting the deposition rate model to determine the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

19. (Original) The device of claim 11, wherein modeling the dependence of the deposition rate on the at least one of the deposition plasma power and the deposition time comprises fitting previously collected metal deposition processing data using at least one of polynomial curve fitting, least squares fitting, polynomial least squares fitting, non polynomial least squares fitting, weighted least squares fitting, weighted polynomial least squares fitting, and weighted non polynomial least squares fitting.

20. (Original) The device of claim 12, wherein modeling the dependence of the deposition rate on the target life of the sputter target comprises fitting previously collected metal deposition processing data using at least one of polynomial curve fitting, least squares fitting, polynomial least squares fitting, non polynomial least squares fitting, weighted least squares fitting, weighted polynomial least squares fitting, and weighted non polynomial least squares fitting.

21. (Currently Amended) A computer programmed to perform a method comprising:

monitoring consumption of a sputter target to determine a deposition rate of a metal layer during metal deposition processing using the sputter target;

modeling a dependence of the deposition rate on at least one of deposition plasma power and deposition time, modeling said dependence of the deposition rate being based upon a target life of the sputter target, modeling said dependence of the deposition rate comprising using [[deposition rate]] sensor data <u>relating to deposition rate</u> for performing said modeling; and

applying the deposition rate model to modify the metal deposition processing to form the metal layer to have a desired thickness.

22. (Canceled)

23. (Original) The computer of claim 21, wherein modeling the dependence of the deposition rate on the at least one of the deposition plasma power and the deposition time comprises modeling the dependence of the deposition rate on both the deposition plasma power and the deposition time.

24. (Original) The computer of claim 22, wherein modeling the dependence of the deposition rate on the at least one of the deposition plasma power and the deposition time comprises modeling the dependence of the deposition rate on both the deposition plasma power and the deposition time.

25. (Original) The computer of claim 21, wherein applying the deposition rate model to modify the metal deposition processing comprises inverting the deposition rate model to determine the at least one of the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

26. (Original) The computer of claim 22, wherein applying the deposition rate model to modify the metal deposition processing comprises inverting the deposition rate model to determine the at least one of the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

27. (Original) The computer of claim 23, wherein applying the deposition rate model to modify the metal deposition processing comprises inverting the deposition rate model to determine the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

28. (Original) The computer of claim 24, wherein applying the deposition rate model to modify the metal deposition processing comprises inverting the deposition rate model to determine the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

29. (Original) The computer of claim 21, wherein modeling the dependence of the deposition rate on the at least one of the deposition plasma power and the deposition time

comprises fitting previously collected metal deposition processing data using at least one of polynomial curve fitting, least squares fitting, polynomial least squares fitting, non polynomial least squares fitting, weighted least squares fitting, weighted polynomial least squares fitting, and weighted non polynomial least squares fitting.

30. (Original) The computer of claim 22, wherein modeling the dependence of the deposition rate on the target life of the sputter target comprises fitting previously collected metal deposition processing data using at least one of polynomial curve fitting, least squares fitting, polynomial least squares fitting, non polynomial least squares fitting, weighted least squares fitting, weighted polynomial least squares fitting, and weighted non polynomial least squares fitting.

31. (Currently Amended) A method comprising:

monitoring consumption of a sputter target to determine a deposition rate of a metal layer during metal deposition processing using the sputter target by modeling a dependence of the deposition rate on a target life of the sputter target;

modeling a dependence of the deposition rate on at least one of deposition plasma power and deposition time, modeling said dependence of the deposition rate comprising using [[deposition rate]] sensor data <u>relating to deposition rate</u> for performing said modeling; and

applying the deposition rate model to modify the metal deposition processing to form the metal layer to have a desired thickness.

32. (Original) The method of claim 31, wherein modeling the dependence of the deposition rate on the target life of the sputter target comprises modeling the dependence of the deposition rate on target lives of a plurality of previously processed sputter targets.

33. (Original) The method of claim 31, wherein modeling the dependence of the deposition rate on the at least one of the deposition plasma power and the deposition time comprises modeling the dependence of the deposition rate on both the deposition plasma power and the deposition time.

34. (Original) The method of claim 32, wherein modeling the dependence of the deposition rate on the at least one of the deposition plasma power and the deposition time comprises modeling the dependence of the deposition rate on both the deposition plasma power and the deposition time.

35. (Original) The method of claim 31, wherein applying the deposition rate model to modify the metal deposition processing comprises inverting the deposition rate model to determine the at least one of the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

36. (Original) The method of claim 32, wherein applying the deposition rate model to modify the metal deposition processing comprises inverting the deposition rate model to determine the at least one of the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

37. (Original) The method of claim 33, wherein applying the deposition rate model to modify the metal deposition processing comprises inverting the deposition rate model to determine the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

38. (Original) The method of claim 34, wherein applying the deposition rate model to modify the metal deposition processing comprises inverting the deposition rate model to determine the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

39. (Original) The method of claim 31, wherein modeling the dependence of the deposition rate on the at least one of the deposition plasma power and the deposition time comprises fitting previously collected metal deposition processing data using at least one of polynomial curve fitting, least squares fitting, polynomial least squares fitting, non polynomial least squares fitting, weighted least squares fitting, weighted polynomial least squares fitting, and weighted non polynomial least squares fitting.

40. (Original) The method of claim 32, wherein modeling the dependence of the deposition rate on the target lives of the plurality of previously processed sputter targets comprises fitting previously collected metal deposition processing data using at least one of polynomial curve fitting, least squares fitting, polynomial least squares fitting, non polynomial

least squares fitting, weighted least squares fitting, weighted polynomial least squares fitting, and weighted non polynomial least squares fitting.

41. (Currently Amended) A system comprising:

a tool monitoring consumption of a sputter target to determine a deposition rate of a metal layer during metal deposition processing using the sputter target;

a computer modeling a dependence of the deposition rate on at least one of deposition plasma power and deposition time, modeling said dependence of the deposition rate being based upon a target life of the sputter target, modeling said dependence of the deposition rate comprising using [[deposition rate]] sensor data <u>relating to deposition rate</u> for performing said modeling; and

a controller applying the deposition rate model to modify the metal deposition processing to form the metal layer to have a desired thickness.

42. (Canceled)

43. (Original) The system of claim 41, wherein the computer modeling the dependence of the deposition rate on the at least one of the deposition plasma power and the deposition time models the dependence of the deposition rate on both the deposition plasma power and the deposition time.

44. (Original) The system of claim 42, wherein the computer modeling the dependence of the deposition rate on the at least one of the deposition plasma power and the

deposition time models the dependence of the deposition rate on both the deposition plasma power and the deposition time.

45. (Original) The system of claim 41, wherein the controller applying the deposition rate model to modify the metal deposition processing inverts the deposition rate model to determine the at least one of the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

46. (Original) The system of claim 42, wherein the controller applying the deposition rate model to modify the metal deposition processing inverts the deposition rate model to determine the at least one of the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

47. (Original) The system of claim 43, wherein the controller applying the deposition rate model to modify the metal deposition processing inverts the deposition rate model to determine the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

48. (Original) The system of claim 44, wherein the controller applying the deposition rate model to modify the metal deposition processing inverts the deposition rate model to determine the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

49. (Original) The system of claim 41, wherein the computer modeling the dependence of the deposition rate on the at least one of the deposition plasma power and the deposition time fits previously collected metal deposition processing data using at least one of polynomial curve fitting, least squares fitting, polynomial least squares fitting, non polynomial least squares fitting, weighted least squares fitting, weighted polynomial least squares fitting, and weighted non polynomial least squares fitting.

50. (Original) The system of claim 42, wherein the tool modeling the dependence of the deposition rate on the target life of the sputter target fits previously collected metal deposition processing data using at least one of polynomial curve fitting, least squares fitting, polynomial least squares fitting, non polynomial least squares fitting, weighted least squares fitting, weighted polynomial least squares fitting, and weighted non polynomial least squares fitting.

51. (Currently Amended) A device comprising:

means for monitoring consumption of a sputter target to determine a deposition rate of a metal layer during metal deposition processing using the sputter target;

means for modeling a dependence of the deposition rate on at least one of deposition plasma power and deposition time, modeling said dependence of the deposition rate being based upon a target life of the sputter target, said means for modeling comprising means for modeling said dependence of the deposition rate comprising using [[deposition rate]] sensor data relating to deposition rate for performing said modeling; and

means for applying the deposition rate model to modify the metal deposition processing to form the metal layer to have a desired thickness.

52. (Original) The device of claim 51, wherein the means for monitoring the consumption of the sputter target to determine the deposition rate of the metal layer during the metal deposition processing comprises means for modeling a dependence of the deposition rate on a target life of the sputter target.

53. (Original) The device of claim 51, wherein the means for modeling the dependence of the deposition rate on the at least one of the deposition plasma power and the deposition time comprises means for modeling the dependence of the deposition rate on both the deposition plasma power and the deposition time.

54. (Original) The device of claim 52, wherein the means for modeling the dependence of the deposition rate on the at least one of the deposition plasma power and the deposition time comprises means for modeling the dependence of the deposition rate on both the deposition plasma power and the deposition time.

55. (Original) The device of claim 51, wherein the means for applying the deposition rate model to modify the metal deposition processing comprises means for inverting the deposition rate model to determine the at least one of the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

56. (Original) The device of claim 52, wherein the means for applying the deposition rate model to modify the metal deposition processing comprises means for inverting the deposition rate model to determine the at least one of the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

57. (Original) The device of claim 53, wherein the means for applying the deposition rate model to modify the metal deposition processing comprises means for inverting the deposition rate model to determine the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

58. (Original) The device of claim 54, wherein the means for applying the deposition rate model to modify the metal deposition processing comprises means for inverting the deposition rate model to determine the deposition plasma power and the deposition time to form the metal layer to have the desired thickness.

59. (Original) The device of claim 51, wherein the means for modeling the dependence of the deposition rate on the at least one of the deposition plasma power and the deposition time comprises means for fitting previously collected metal deposition processing data using at least one of polynomial curve fitting, least squares fitting, polynomial least squares fitting, non polynomial least squares fitting, weighted least squares fitting, weighted polynomial least squares fitting, and weighted non polynomial least squares fitting.

60. (Original) The device of claim 52, wherein the means for modeling the dependence of the deposition rate on the target life of the sputter target comprises means for fitting previously collected metal deposition processing data using at least one of polynomial curve fitting, least squares fitting, polynomial least squares fitting, non polynomial least squares fitting, weighted least squares fitting, weighted polynomial least squares fitting, and weighted non polynomial least squares fitting.

61. (Currently Amended) A method comprising:

monitoring consumption of a sputter target to determine a deposition rate of a metal layer during metal deposition processing using the sputter target;

modeling a dependence of the deposition rate based upon a deposition plasma power and a deposition time, modeling said dependence of the deposition rate being based upon a target life of the sputter target, modeling said dependence of the deposition rate comprising using [[deposition rate]] sensor data <u>relating to deposition rate</u> for performing said modeling, said modeling comprising monitoring the consumption of sputter target; and

applying the deposition rate model to modify the metal deposition processing to form the metal layer to approach a predetermined thickness.